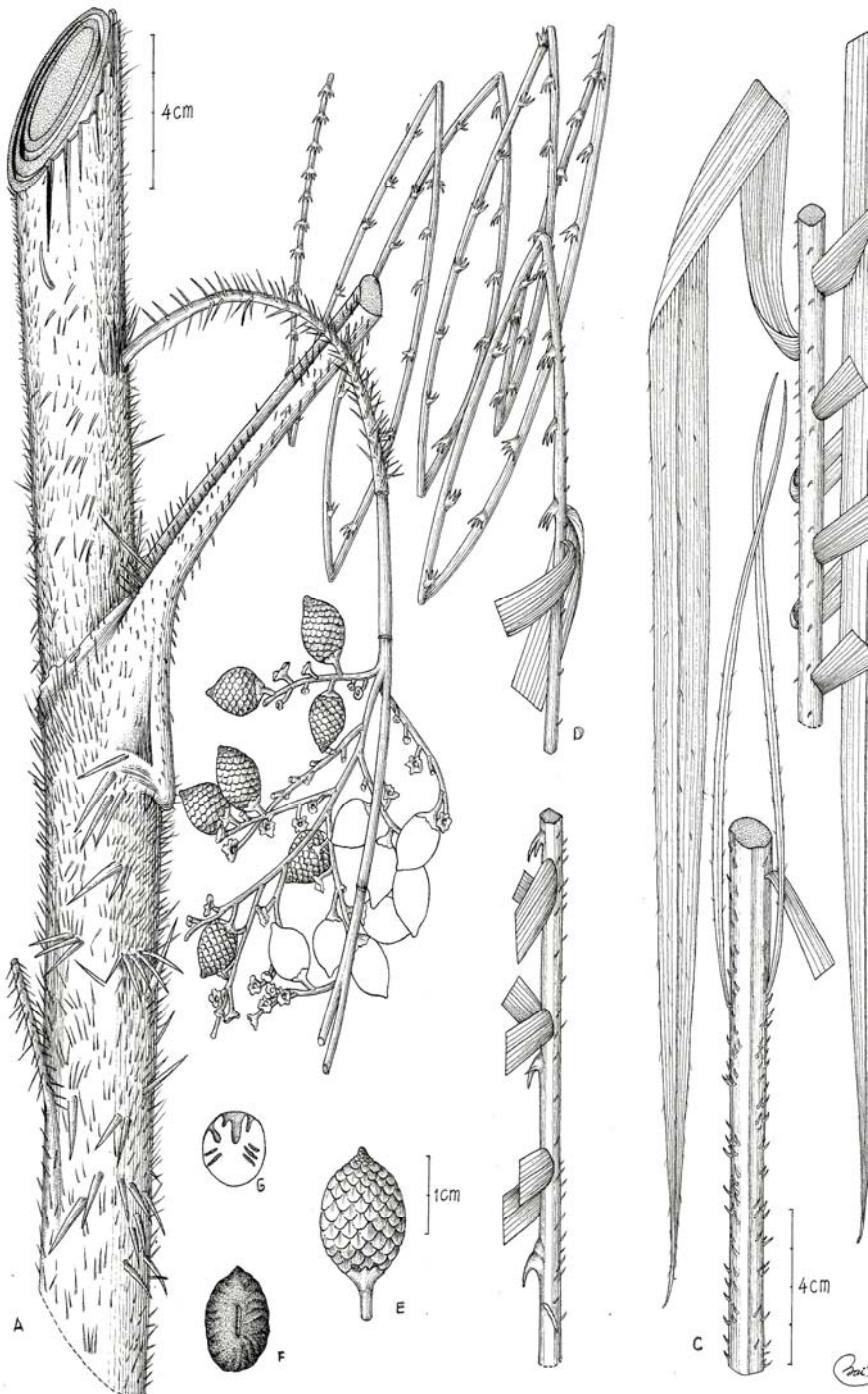




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NOTES ON FREYCINETIA (PANDANACEAE) FROM JAMBI, SUMATRA WITH THE DESCRIPTION OF A NEW SPECIES

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ABSTRACT

PASARIBU, N. & WIDJAJA, E.A. 2009. Notes on *Freycinetia* (Pandanaceae) from Jambi, Sumatra with the description of a new species. *Reinwardtia* 13(1): 87–92. — Nine species of *Freycinetia* are enumerated for Jambi, Sumatra, Indonesia: *F. angustifolia* Blume, *F. berbakensis* Widjaja, Pasaribu & Hidayat, *F. imbricata* Blume, *F. javanica* Blume, *F. kamiana* B.C.Stone, *F. rigidifolia* Hemsl., *F. sumatrana* Hemsl., *F. winkleriana* Martelli and *F. scabrosa* Pasaribu & Widjaja,. The latest species is newly described. A key to the nine species in Jambi is provided.

Keywords: Jambi, *Freycinetia*, *Pandanaceae*

ABSTRAK

PASARIBU, N., WIDJAJA, E.A. 2009. Catatan tentang *Freycinetia* (Pandanaceae) dari Jambi, Sumatera berikut pertelaan satu jenis baru. *Reinwardtia* 13(1): 87–92. — Sembilan jenis *Freycinetia* diperoleh dari Jambi, Sumatera, Indonesia: *F. angustifolia* Blume, *F. berbakensis* Widjaja, Pasaribu & Hidayat, *F. imbricata* Blume, *F. javanica* Blume, *F. kamiana* B.C.Stone, *F. rigidifolia* Hemsl., *F. sumatrana* Hemsl., *F. winkleriana* Martelli, dan *Freycinetia scabrosa* Pasaribu & Widjaja. Jenis yang terakhir adalah jenis baru pertama kali dipertelakan. Kunci identifikasi untuk sembilan jenis *Freycinetia* di Jambi disajikan.

Kata kunci: Jambi, *Freycinetia*, *Pandanaceae*

INTRODUCTION

Nine species of *Freycinetia* Gaudich were reported for Jambi (Widjaja & Hidayat 2007). This number is almost as high as recorded previously by Stone (1970a), where he mentioned that there are 10 species occurred in Sumatera. During an inventory of this genus in Jambi, one more species was found and described here as a new species. The present article briefly discusses the nine species which have been written previously by Widjaja & Hidayat (2007) and Widjaja *et al.* (2009). A key to the nine species in Jambi, nomenclature, habitat, recent new notes of specific morphological characters and specimen examinations are provided.

Many new specimens of *Freycinetia* for this study were collected by the first authors during an exploration of this genus around Sumatra. The collection were deposited in MEDA, a local university herbarium in Sumatera Utara, belongs to the University of Sumatra Utara, Medan. MEDA is pro-

posed to be a herbarium and written in the list of herbaria in Indonesia (Girmansyah *et al* 2006).

IDENTIFICATION KEY TO THE SPECIES OF FREYCINETIA IN JAMBI

1. a. Leaves lanceolate, elliptic, oblong to oblanceolata 2
b. Leaves narrow to widely linear 6
2. a. Leaves lanceolate to broadly lanceolate 3
b. Leaves elliptic to oblong or oblanceolate 5
3. a. Pedicels less than 2 cm long; scars of pedicel bracts less than 6 mm long; apex of auricle rounded to truncate, entire or minutely fimbriate at the apex *F. imbricata*
b. Pedicels more than 3 cm long, scar of pedicel bracts more than 9 mm long, apex of auricle acuminate, fimbriate at the apex 4
4. a. Auricles lobed; length of pedicel bract less than half of pedicel length *F. sumatrana*
b. Auricle adnate, length of pedicel bract more than half of pedicel length *F. scabrosa*

5.a. Leaves elliptic, apex acute, septae of auricles 4, pedicel robust.....*F. javanica*
 b. Leaves oblong to oblanceolate, apex acuminate with caudate tip, septae of auricles single, pedicel slender*F. kamiana*

6.a. Inflorescence racemose, auricles laciniate, horizontal septa present*F. angustifolia*
 b. Inflorescence umbellate, auricles adnate, horizontal sept not seen7

7.a. Leaves widely linear, auricle apex tapered to slightly rounded glabrous to scarcely hairy fimbriate spinule8
 b. Leaves narrowly linear, $14-30 \times 0.2-0.4$ cm, auricle apex attenuate, densely hairy*F. berbakensis*

8.a. Leaves widely linear, $25-63 \times 0.5-0.9$ cm, densely serrate at the base, auricle tapered to slightly obtuse towards the apex*F. winkleriana*
 b. Leaves widely linear, $15-33 \times 0.8-2.5$ cm denticulate at the base, auricle rounded and abruptly truncate at the apex*F. rigidifolia*

SPECIES NOTES

1. FREYCINETIA ANGUSTIFOLIA Blume

Freycinetia angustifolia Blume, Rumphia 1: 157. t. 43, f. 1-7. 1835. —Lectotype: Java, G. Seribu, *Blume 841* (L, holo, sh. 908. 164-106).

Freycinetia malaccensis Ridl., Mat. Fl. Malay. Penins. 2: 233. 1907. —Lectotype: Malacca, *Derry 406* (SING!, hololecto), designated by B.C. Stone, Gard. Bull. Singapore 25: 197. 1970).

Freycinetia brunoniana Wallich, Number. List: 3660. 1831, nom. nud. —Voucher: Penang, *G. Porter s.n.* (K).

Freycinetia debregeasiana Gaudich., Voy. Bonite, Bot.: t. 37, f. 1-11. 1841(-1852). —Type: not stated, probably Malacca or Singapore (*Gaudichaud s.n.* 1837; P? fragment in FI. n.v.)

Freycinetia insipida Martelli ex Elmer, Leafl. Philipp. Bot. 3: 114. 1911. —Type: Capiz Province, Mt. Magelanes (Giting-giting), May 1910, *Elmer 12426* (FI, holo n.v.; PNH, lost, EDINB n.v.).

Distribution. Malay Peninsula (Johor, Malacca, Negeri Sembilan, Penang, Perak, Selangor), Singapore, Sumatra (It is widely distributed in Jambi Province), Java (G. Salak), Borneo (Sarawak, Banjarmasin), Philippines (Sibuyan).

Habitat. Littoral zone, primary and secondary forest, roadsides, swampy areas, lowlands, rarely up to 1800 m altitude.

Notes. This species was first described by Blume from Java and again by Ridley as a new species from the Malay Peninsula, which was duly synonymised by Stone (1970b). Stone (1970b) mentioned that 1-3, rarely 4, very rarely 5 stigma remain, but in the present study it was found that the

stigma remain are 1-6, very rarely 7. Also, he mentioned that the outermost bracts would be dark to pale yellow or yellow-orange, sometimes flecked with red on the inner surface. However, in fresh plants in the field, the outermost bracts are pale green to greenish with green tips.

This species is characterized by its linear leaves, basal leaves with spines, leaf auricles laciniate or finely fibrous with 2 (or 3) horizontal septa across the auricle width, and racemose inflorescences.

Specimens examined: ACEH: Simelue, *Achmad 1708* (BO). SUMATERA UTARA: Sibayak Forest, Sibolangit, *Atthorick 1511* (MEDA), *Pasaribu 192* (MEDA), Aek Salabat, Asahan, *Siboea 5730* (K), Sibolga, *Teysmann 2011* (BO). JAMBI: Sungai Penuh, *Dransfield 2749* (BO), Sungai Enam Belas, Berbak National Park, *Hidayat 1036* (BO), Bukit Dua Belas National Park, *Widjaja 8075* (BO). SUMATERA BARAT: Gaduik Kaciak, Padang, *Arbain 458* (BO), Air Sirah, Solok, *De Vogel & Vermeulen 7331* (BO), *Pasaribu 224* (MEDA), Sikabaluan, Mentawai, *Van Borssum Waalkes 2683* (BO, L). RIAU: Bengkalis, *De Haan 57* (BO). BENGKULU: Atas Tebing Village, *Pasaribu 257* (MEDA). SUMATERA SELATAN: Sembilang National Park, *Widjaja 8786* (BO). BANGKA BELITUNG: Pangkal Pinang, *Teysmann 123, 124* (BO). LAMPUNG: Kota Agung, Bukit Barisan Selatan, *Widjaja s.n.* (BO).

2. FREYCINETIA BERBAKENSIS Widjaja, Pasaribu & Hidayat

Freycinetia berbakensis Widjaja, Pasaribu & Hidayat. Reinwardtia 12: 441-442. 2009. Type: Jambi, Berbak National Park, *Widjaja 7629* (BO, holo; K, L).

Distribution. Sumatera, Jambi.

Habitat. Swampy areas, c. 50 m altitude.

Notes. This species differs from *F. confusa* Ridl. by the very slender auricles along the leaf base, of which the apex is slightly rounded and tapering, the margin densely fimbriate and gradually less spinose towards the base, the inner sides of the pedicels scabrous at the apex, glabrous along the edges, and the number of stigma remain 2 or 3 (-7).

Specimen examined. JAMBI: Rawa Laut, Muaro, *Hidayat 987* (BO), Berbak National Park, *Widjaja 7629, 8072* (BO, K, L).

3. FREYCINETIA IMBRICATA Blume

Freycinetia imbricata Blume, Rumphia 1: 157, t. 40, f. 1-11. 1837. —Lectotype: Java, “silvis intactis mon-

tiūm altissimorum Javae occidentalis", *Blume* 2066 (L, holo, sh. 908. 164–676).

Freycinetia schefferi Solms in *Linnaea* 42: 98. 1878. — Syntypes: Java, cult. in Hort. Bog., Scheffer s.n. (GOET, holo)

F. kingiana Ridl., *Mat. Fl. Malay. Penins.* 2: 234. 1907. — Lectotype: Malay Peninsula, Perak, Goping King's Collector = *Kunstler* 4654 (SING!, holo; Fl n.v.), designated by B.C. Stone (1970b, c: 204).

F. imbricata var. *hispidula* B.C. Stone, *Gard. Bull. Singapore* 25: 204. 1970. — Type: *Stone* 5847-a, (KLU, holo), Malay Peninsula, Selangor, Genting Sempah, Jul 1966.

Freycinetia imbricata var. *kuchinensis* (Martelli) B.C. Stone, *Gard. Bull. Singapore* 25: 215. 1970. — *Freycinetia kuchinensis* Martelli, *Webbia* 3: 178, 320 ("kuchinensis"). 1910. — Lectotype: Sarawak, Kuching, *Beccari* PB 782-bis (Fl, holo), designated by B.S. Stone (1970-b: 215, "type").

Distribution. Malay Peninsula (Johor, Pahang, Perak, Selangor), Sumatra (widely distributed), Borneo (Sarawak and Sabah).

Habitat. Primary and secondary forest, up to 1350 m altitude.

Notes. This species is characterized by the lanceolate leaves, membranaceous auricles, apex adnate to stem or separate from stem and then slightly rounded to truncated towards, sparsely denticulate, globose syncarp—that are elliptic, terminal, placed on a short and glabrous pedicel.

Specimens examined. ACEH: Kloet Nature Reserve, *De Wilde & De Wilde-Duyfjes* 19668 (L), Mount Leuser, *De Wilde & De Wilde-Duyfjes* 20443, 20561 (L), Ketambe, *Pasaribu* 157, 162, 172, 240 (MEDA), Pantai Cermin, Aceh Jaya, *Pasaribu* 186 (MEDA). SUMATERA UTARA: Sibayak Forest, Sibolangit, *Pasaribu* 198 (MEDA). JAMBI: Berbak National Park, *Widjaja* 7696 (BO). SUMATERA BARAT: Merapi Mountain, *Binnemeijer* 5031, 5072 (BO), Padang, *De Haan* 29 (BO). BENGKULU: TWA Bukit Kaba, Rejang Lebong, *Pasaribu* 249 (MEDA), Bukit Daun, Kapahiyang, *Pasaribu* 253 (MEDA). SUMATERA SELATAN: Isau-isau, Lahat, *Pasaribu* 267, 269 (MEDA).

4. FREYCINETIA JAVANICA Blume

Freycinetia javanica Blume, *Rumphia* 1: 157, t. 41, f. 1–3. 1835. — Lectotype: Java, *Blume* 227 (L, holo, sh. 908. 164–253).

Freycinetia bennettii Miq., *Pl. Jungh.* 1: 167. 1852. — Type: Java, *Junghuhn* s.n. (L, holo, sh. 908. 164–285; U, iso).

Freycinetia lucens Ridl., *Mat. Fl. Malay. Penins.* 2: 232. 1907. — Lectotype: Singapore, *Ridley* 3703 (SING!, holo, K!), designated by B.C. Stone (1970b:

195).

Freycinetia montana Ridl., *Mat. Fl. Malay. Penins.* 2: 234. 1907. — Lectotype: Malay Peninsula, Perak, Taiping Hills, *Ridley* 5194 (SING, holo), designated by B.C. Stone (1970b: 195).

Distribution. South Thailand (Kra Peninsula), Malay Peninsula (widespread), Singapore, Sumatra (widespread), Java (Jawa Barat dan Jawa Tengah), Borneo (Tarak).

Habitat. Primary and secondary forests, roadsides, up to 1600 m altitude.

Notes. Ridley (1907) proposed *F. lucens*, but after a careful study of the specimens showed it to be indistinguishable from *F. javanica*. The latter can be distinguished by its elliptic to oblong leaves, an acute apex and entire margin with a few small weak teeth, the membranaceous auricle that is adnate, partly early caducous, and has an acute to rounded, entire to minutely denticulate apex, and with four horizontal septae across the width of the auricle.

Specimens examined. ACEH: Simeuleu, *Achmad* 946 (BO), Kelling Talaman, *Binnemeijer* 998 (BO), Mount Leuser, *De Wilde & De Wilde-Duyfjes* 12882, 15600 (BO, L), Ketambe, *Pasaribu* 174 (MEDA). SUMATERA UTARA: Sinabung, *Attorick* 1430 (MEDA), Sibolangit, *Lorzing* 5665, 12720 (L), Aek Salabat, Asahan, *Siboea* 9631 (L). JAMBI: Air Terjun Village, Kerinci, *Pasaribu* 287 (MEDA), Berbak National Park, *Widjaja* 7698, 8103 (BO). SUMATERA BARAT: Air Sirah, Padang, *de Vogel* 2850 (BO), Community Garden (Tahura) Muhammad Hatta, *Pasaribu* 218 (MEDA). BENGKULU: Bukit Kaba, Rejang Lebong, *Pasaribu*, 242, 247 (MEDA), Atas Tebing Village, *Pasaribu* 258 (MEDA). SUMATERA SELATAN: Rawas, Palembang, *Dumas* 1654 (BO). BANGKA BELITUNG: Lobok Besar, *Kostermans* 86 (BO), Pangkal Pinang, *Teyssmann* 128 (BO). KALIMANTAN TIMUR: Nunukan, North of Tarakan, *Meijer* 2100 (L).

5. FREYCINETIA KAMIANA B.C. Stone

Freycinetia kamiana B.C. Stone, *Gard. Bull. Singapore* 25: 205, t. 3–c, plate II. 1970. — Type: Malay Peninsula, Selangor, Bukit Lagong, behind Kepong, Ms. *Yie Kiew Kam* s.n. (KLU, holo).

Distribution. Malay Peninsula (Selangor), Sumatra (Jambi, Sumatera Utara and Sumatera Barat).

Habitat. Primary and secondary forest, 275 up to 950 m altitude.

Notes. This species is closely resembles to *F.*

javanica, but is a larger plant. The stem is rather stiffly erect. Leaves slightly long oblanceolate to oblong, cordately tipped, auricles short and broadly adnate with a serrate margins and one horizontal septa; syncarps terminal. Stone (1970b) described the species on Malaysian plants from Bukit Lagong, Selangor. The plant cultivated in the Bogor Botanical Gardens (XII-B-V-128) was said to have been introduced from Bukit Tinggi, Sumatera Barat (Stone, 1970b: 206).

Specimens examined. SUMATERA UTARA: Tangkah, Atthorick s.n. (MEDA), Bukit Lawang, Dransfield 3258 (BO, L), *Pasaribu* 244 (MEDA). SUMATRA BARAT: Community Garden (Tahura) Muhammad Hatta, *Pasaribu* 222 (MEDA), Andalas University Forest, *Pasaribu* 229 (MEDA). JAMBI: Tapan, Sungai Penuh, Dransfield 4152, 4153 (BO).

6. FREYCINETIA RIGIDIFOLIA Hemsl.

Freycinetia rigidifolia Hemsl., Bull. Misc. Inform. Kew 1896: 165. 1896. —Type: Borneo, Sarawak, Haviland 436 (K!, holo).

Freycinetia acuminata Ridl., Mat. Fl. Malay Penins. 2: 233. 1907. — Type: Malay Peninsula, Selangor, Ridley 7656 (SING!, holo).

Distribution. Malay Peninsula (Johor, Pahang, Perak, Selangor, Terengganu), Sumatera (Jambi, Riau, and Sumatera Barat), Borneo (Sarawak, Sabah, and Kutai).

Habitat. Secondary forests, roadsides, c. 250 up to 1900 m altitude.

Notes. This species is very easily recognizable by its very stout leaves with a clearly denticulate basal margin, and rounded auricles with an abruptly truncate apex and fimbriate-spinules.

Specimens examined. JAMBI: Kerinci, Sungai Penuh, Dransfield 2643 (BO). SUMATERA BARAT: Community Garden (Tahura), Muhammad Hatta, *Pasaribu*, 217 (MEDA). RIAU: Natuna Island, *Van Steenis* 1200 (BO). SUMATERA SELATAN: Linggau, *Teysmann* 126 (BO). BORNEO: Sabah, *Chew and Corner* 4269 (K), *Madani* 50583 (K), Serawak, *Fuchs* 21014 (K), Kinabalu, Ranau, *Mikil* 38635 (K).

7. Freycinetia scabrosa Pasaribu & Widjaja, spec. nov.—Fig 1.

Freycinetiae minahassae proxima auriculis apicis marginibus prominentibus fimbriatis, pedicelli angulis subtiliter scabris spinosisque, pedicelli bractearum cica-

*tribus prominentibus plus quam medio pedicelli longitudinis, syncarpiis 3, baccis lageniformibus differt. — Type: Jambi, Kerinci District, Gunung Tujuh Subdistrict, Air Terjun Village, *Pasaribu* 286 (MEDA, holo; BO).*

Climber, climbing up to 7 meter high, internodes 1.1–1.4 cm long, 1.9–2.3 cm in diameter. Leaves imbricate, very closely crowded, broadly lanceolate, 44–96 x 3.3–4.2 cm, coriaceous, white waxy on the lower surface, margin armed from the base to the apex, densely denticulate at the base, semi-amplexicaul in the basal leaves, apex acuminate, with long tapering tips, underneath in the upper half with an armed midrib, longitudinal veins prominent on both sides. Auricles persistent in the upper leaves, chartaceous, 10–13 x 0.9–1.5 cm, adnate, apex acuminate, with fimbriate margins, pale green, horizontal septae 1 across the width of the auricle. Inflorescences terminal: peduncle terete, 4.5–6.6 x 0.9–1.2 cm in diameter; pedicels semiterete, 3.4–4.5 x 0.5–0.7 cm in diameter, finely scabrous with spiny angles, light brown; scars of pedicel bracts 2–2.8 cm long, more than half the length of the pedicel. Syncarps 3, elliptic-oblong, 5.4–9.5 x 2.3–3 cm in diameter, dark green (immature), pyramidal and separated berries with rigid pileus, berry 0.5–1.2 cm long, apex obtuse and flat, stigma remain 2 or 3 (–6).

Distribution. Sumatera, Jambi.

Habitat. Roadsides at c.1350 m altitude.

Notes. This species can be distinguished from *F. minahassae* by its auricles with the apical margins prominently fimbriate, pedicel semiterete, finely scabrous and spiny along the pedicel angle, pyramidal berries with rigid pileus. This species is different from *F. insignis* by the presence of its three syncarps and 2 or 3 (–6) stigma remain.

Etimology. The species epithet *scabrosa* is given due to its prominent scabrous pedicels

Specimen examined. JAMBI: Kerinci District, Gunung Tujuh Subdistrict, Air Terjun Village, *Pasaribu* 286 (MEDA, BO)

8. FREYCINETIA SUMATRANA Hemsl.

Freycinetia sumatrana Hemsl., Bull. Misc. Inform. Kew 1896: 167. 1896. —Type: Sumatra, Mt. Singgalang, Beccari P.S. 211 (K!, holo; L!, FI).

Freycinetia valida Ridl., Mat. Fl. Malays. Penins. 2: 233. 1907. — Type: Singapore, Garden Jungle, Chua Chu Kang, Ridley 3937 (SING!, holo).

Freycinetia auriculata Merr., Philipp. J. Sci. 3: 312.

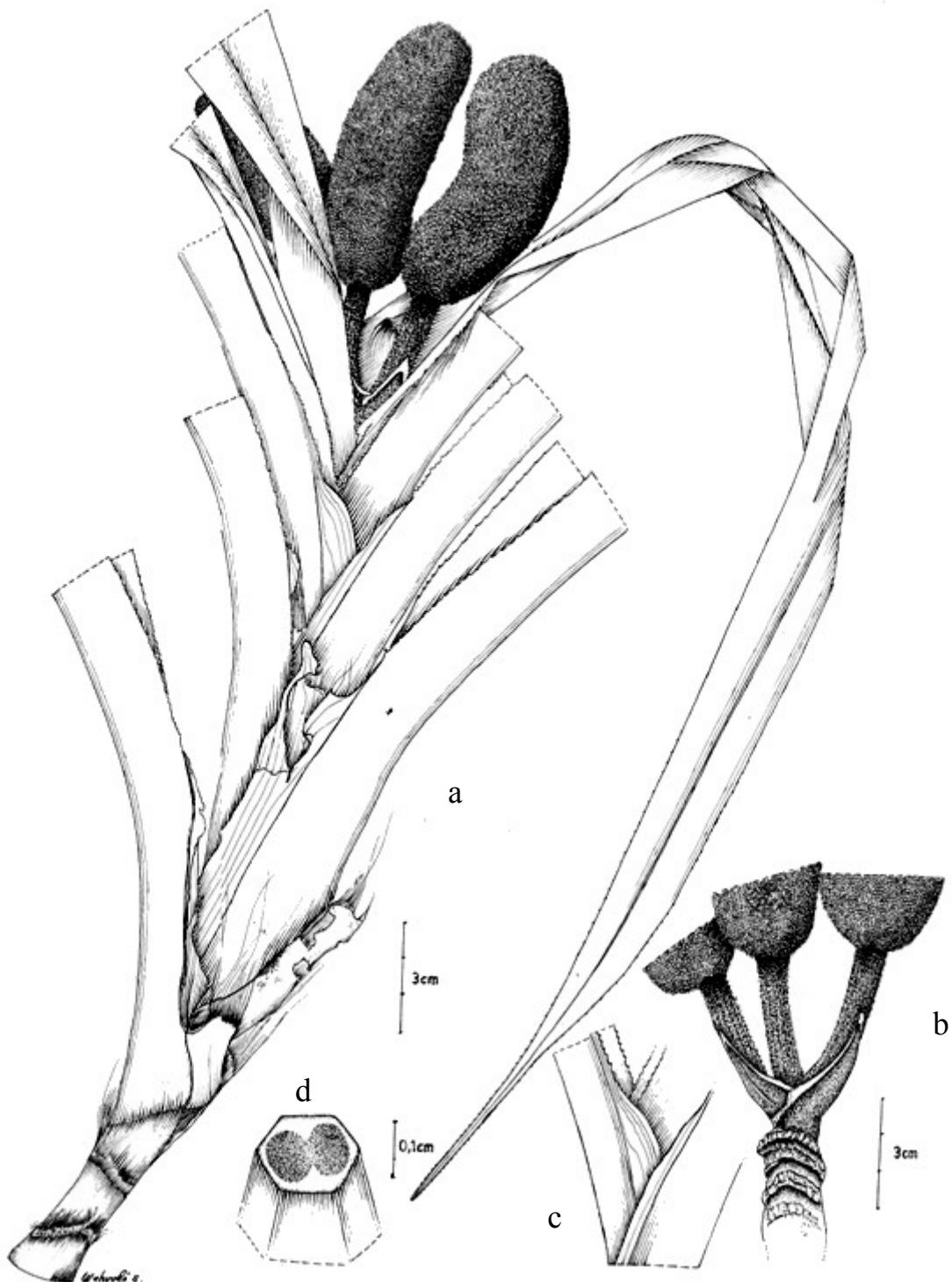


Fig. 1. *Freycinetia scabrosa* Pasaribu & Widjaja. (a. Leaf, b. Syncarp, c. Auricle, d. Stigma). Drawn from *Pasaribu 286*.

1908. — Type: Palawan, near Puerto Princesa, May 1906, BS 876 (Foxworthy), (PNH, holo, lost; NY, US).

Freycinetia sumatrana var. *penangiana* B.C. Stone, Gard. Bull. Singapore 25: 202, t. 1-d, 2. 1970. — Type: Malay Peninsula, Selangor, Kanching, Templer Park, Jun 1965, B.C. Stone 5089 (KLU, holo).

Distribution. Andaman and Nicobar islands (B.C. Stone, 1969), widespread in the Malay Peninsula,

Singapore, Sumatera (widely distributed), Jawa (Jawa Barat), Borneo (Sarawak, Sabah), and the Philippines (Basilan Isl., Palawan).

Habitat. Primary and secondary forests, roadsides, rarely up to 1400 m altitude.

Notes. This species can be identified by its big and

long linear-lanceolate leaves, with spines at their base, auricles purplish, long-lobed, triangular with a serrate margins.

Specimens examined. ACEH: Mount Leuser, *De Wilde & De Wilde-Duyfjes* 18424 (L), Ketambe, *Pasaribu* 159 (MEDA), TWA Iboih, Sabang, *Pasaribu* 190 (MEDA). SUMATERA UTARA: Sibolangit, *Lörzing* 12721, 11004 (BO), TWA Daleng Lancuk Lau Kawar, *Pasaribu* 177 (MEDA), Sibolangit, *Pasaribu* 195 (MEDA), Bukit Lawang, Langkat, *Pasaribu* 243 (MEDA), Asahan, *Yates* 1712 (BO). JAMBI: Sungai Penuh, *Dransfield* 2726 (BO), Botanical Garden Bukit Sari, *Hidayat* 1069 (BO), Gunung Tujuh, Kerinci, *Pasaribu* 238 (MEDA), Berbak National Park, *Widjaja* 7697, 8127 (BO). SUMATERA BARAT: Siberut, *Kloss* 14565 (K), Community Garden (Tahura) Muhammad Hatta, *Pasaribu* 215 (MEDA), Air Sirah Solok, *Pasaribu* 224 (MEDA). SUMATERA SELATAN: Bukit Sumur, Lawang Agung, *Pasaribu* 263 (MEDA), Sembilang National Park, *Widjaja* 8776 (BO). BENGKULU: Bukit Daun, Kapahiyang, *Pasaribu* 252 (MEDA).

9. FREYCINETIA WINKLERIANA Martelli

Freycinetia winkleriana Martelli, *Webbia* 3: 168. 1910. — Type: S.E. Borneo, Djili, 22/8/1908, *Hubert Winkler* 3313 (B, holo, lost, FI fragment).

Distribution: Sumatera, Borneo (Sarawak, Banjarmasin)

Habitat: Swamp forest & primary forest rarely up to 50 m altitude.

Notes. This species is characterized by its linear leaves, margin basally densely serrate, becoming serrate toward the apex, longitudinal veins visible on both sides, chartaceous, slender auricles, adnate, tapering to slightly obtuse toward the apex. Inflorescences terminal or axillary.

Specimens examined: JAMBI: Rawa Laut Muaro, *Hidayat* 986, Berbak National Park, *Widjaja* 8067, 8102, 8112 (BO). RIAU: Indragiri Hulu, *Buwalda* 6354 (L), 6394, 6534 (BO), Lancang Kuning, Tesso Nilo National

Park, *Pasaribu* 281 (MEDA). SUMATERA SELATAN: Banyuasin, *Endert* 1120, 1123 (BO). BORNEO: Brunai, Andalau, *Ashton* 21573 (K), Kuala Temburong, *Wong* 2001 (K).

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